PREFACE TO THE SECOND EDITION

The first edition of *Forest Ecosystems: Concepts and Management*, with my colleague William Schlesinger of Duke University, was published in 1985. At that time, most of the information on forest ecosystems consisted of mass balance analyses conducted on stands or small watersheds for periods up to one year. Few simulation models were available, and those that could be tested were largely restricted to predictions of streamflow. Today, new methods and new models provide a much wider basis for extrapolation, in space as well as time. In 1991 and again in 1997, William Schlesinger demonstrated his unique abilities to synthesize and expand our understanding of terrestrial and aquatic ecosystems by publishing *Biogeochemistry: An Analysis of Global Change.*

The opportunity to expand the scope of analysis of forest ecosystems was clear. Such an expansion, however, required new techniques and experience beyond those possessed by either author of the first edition. With my colleague's support, I sought a new coauthor with experience that extended to the global scale. The person with the most noteworthy experience in scaling the analysis of forest ecosystems was Steven Running at the University of Montana. To my pleasure, he agreed to join me in the endeavor of writing a major revision of the first edition that emphasized quantitative modeling and extrapolations across large spatial and time scales.

A broadened perspective of management is essential today. The pressing issues include regional and global analyses of biodiversity, changes in climatic cycles, implications of wide-scale pollution, and the possibility of fire, floods, insect out-breaks, and other major disturbances that extend beyond the limits of political boundaries. Organizing the principles and providing examples for expanding the horizon of ecosystem analyses were the challenges in writing the new edition. From our own experience in teaching graduate and undergraduate courses, we recognize the difficulty in presenting material that crosses many fields, but the success of expanded integration and problem analysis lies in acquiring new methods and concepts. To that end we have made an attempt to define terms and to explain concepts in a variety of ways by providing equations, graphs, and tabular examples.

Many critical facets of ecosystem behavior, as well as future changes in the environment, remain unknown. Perhaps the best we can do is to distinguish those processes that have a firm basis for analysis from those that require more research. The search for principles that scale, matched with appropriate methods, will be required, regardless of the quest. We hope that students, faculty, research scientists, and managers of natural resources will gain confidence in their abilities to predict and to monitor the implications of various changes. We encourage concern about the long-term implications of policies, in the hopes that the alternatives considered will sustain ecosystem processes to which many organisms contribute, and on which all life depends.

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